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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

JULY 23, 1932

New Flame From Billions of Particles

See Page 52

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SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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? DO YOU KNOW THAT ?

Book-binding with rubber latex is now considered feasible.

A supposed ruined city in the Arabian Desert, explored by H. S. Philby, proved to be a series of meteoric craters.

The lookdown, a fish of southern waters, might well be called the prize-fighter in view of its underslung jaw and the angles of its face.

In 1929, Japan sent 16 million yards of rayon goods to India; in 1930, she sent 33 million, and in 1931, 72 million.

Experiments at Cornell show that vegetables on roadside stands keep fresh longer if displayed on a rack sprayed with a fine mist of water.

Lamps, radios, and other electrical devices can be automatically turned on or off by a combination electric clock and time switch which uses a self-starting, slow-speed motor.

Pitcher plants, which hold water, a chosen by some kinds of mosquitoes breeding places.

China's reputation for having ri mineral resources is not borne out b scientific surveys.

Strawberries, which are 90 per ce water, are valuable as food chiefly b cause of the iron and vitamin C th contain.

Up to 1900, most gladioli grown American gardens came from Europ today 60 per cent. of the varieties the market are of American origin.

During the Spanish-American W one American soldier in five contract typhoid fever; whereas in the Wor War there were almost no cases.

A memorial column to Admir Peary, discoverer of the North Po will be erected in Greenland by t Greenland Expedition of the Univers of Michigan.

WITH THE SCIENCES THIS WEEK

Curiosity arousing questions for the teacher and general reader. Book references in italic type are not sources of information of the articles, but are references for further reading. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

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Where has treatment of drug addiction according to the Bancroft theory been found ineffective? p. 57

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ZOOLOGY

How does a curious species of frog in Mexico fly? p. 51

PSYCHOLOGY

Psychological Tests Refit Unemployed For Better Jobs

Several Cities Begin Experimental Assays of Human Material to Find Kinds of Work Men Are Best Fitted For

NO ONE would think of operating a mine unless the ore being excavated were assayed frequently and carefully. At the present time our civilization is being conducted without evaluations of its human raw material.

Millions of men are idle through an economic clogging of the wheels of industry. This is a severe indictment of the world we live in. Millions of people are discouraged through their inability to find work. Enforced idleness causes them to lose confidence in themselves.

At such times as this assaying of human abilities is sorely needed. In addition to that essential minimum of food and shelter which a stable civilization must afford its human units, there should be given each individual the opportunity of discovering how he can serve the world most effectively.

On an experimental scale at Minneapolis, St. Paul, Duluth, Philadelphia and Rochester, unemployed persons are being tested and evaluated by psychological methods in order that they may resume most effectively their productive places in the producing world.

When American armies were entering the World War psychologists went into uniform and applied the famous Army "Alpha" and "Beta" tests to help place soldiers in the most effective places. The man with the outstanding military bearing was not always the best commander and the doughboy of high intelligence might be wasted digging ditches.

So in this economic emergency, psychologists can perform an even greater service. It is also more difficult. Flags do not wave, bands do not play, crowds are more likely to growl than cheer. It is easier to find people for jobs than jobs for people.

One part of the task is to discover the kinds of abilities that are necessary for various kinds of jobs. Tests for general intelligence, special abilities, personality and other human attributes, given to successful workers, allow the psychologists to write specifications for various kinds of workers.

The person out of a job is put through an assaying process, not as a piece of human clay, but as a human being. Psychological tests reveal his abilities and shortcomings. How he spends his money and his time is discussed. His physical health is evaluated by a medical examination and his mental health is considered when that is necessary. The staff of experts considers each person individually and works out a recommended plan for his future endeavor. Sometimes he is advised to change his occupation, often he needs intensive re-training. The unemployed person emerges from the assay with hope and greater prospects.

Assaying human beings costs money and money is not easy to find. The cost is about $15 per person when it is done wholesale. But individual diagnosis and training for all the unemployed would undoubtedly be a paying addition to the mechanisms that will need to be put into operation to assure everyone of the opportunity to work and live in this era of too much material goods and too few jobs.

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TELESCOPIC MAST

A new experimental mooring mast for airships is nearing completion at Lakehurst, N. J. A novel feature of this giant "hitching post" is that it is telescopic. When extended to its full height it is 160 feet tall —as tall as a fifteen-story office building. The airship is moored to the mast when it is thus extended. Then the mast, ship and all, is drawn down so that it will slide easily into the hangar on specially provided tracks. There is no need, with this mast, for the ship to come very close to the ground; it can be moored at a height which minimizes danger to the ship, ground crews, and spectators. The mast as shown in the photograph lacks the cap which will finish the top.

ENGINEERING

"Dumb Design" Slows Coming Of Truly Modern Automobile

LIGHTER automobiles that provide more luxurious, safe and economical transportation would be built if automobile designers just took a few lessons from aircraft engineers.

W. B. Stout, veteran automotive engineer and designer, had a chance to tell how the automobile of tomorrow should be built. And he used it at the recent annual meeting of the Society of Automotive Engineers when he spoke as aircraft engineering vice-president.

Automobile designers, he argued, must shake off the heavy weight of "dumb design" and build cars that are in line with up-to-date knowledge and improved practices. Design cars like airplanes and save weight, make them ride and control better. Lack of forethought robs the auto owner of half of the luxury he should get from a given wheelbase, Mr. Stout argues. Only a quarter of the ground space covered by a car is delivered to autoists in usable space.

Here are Mr. Stout's specifications for automobiles as they should be:

Interior—More space, luxury, comfort than in present cars. Power—Multi-cylinder, high-speed, soundless, vibrationless engine at all city speeds. About 20 pounds per horse-power for complete car, loaded. Engine, 50 to 100 horsepower. Complete Weight—Less

than 1000 pounds. Steering—Effortless. Control—Centrifugal clutch, working with throttle and no other connections. Acceleration—0 to 60 miles per hour in 8 seconds. Economy—30 miles per gallon. Body—Streamlined, fixed windows and enclosed wheels. Comfort—Forced ventilation, with cooling system for summer touring. Tires—26x10 or the equivalent. Price—Around $2,000 on small production. Mr. Stout foresees that a new type of sales organization and factual advertising appeal would be needed to market the car.

Science News Letter, July 23, 1932

CHEMISTRY

Vitamins Lurk in Spinach Be it Dark, Pale or Curly

YOU can have your spinach pale or dark, smooth or curly, and still get your share of vitamins A, B and C, it appears from studies reported by Hilda Black Kifer and Hazel E. Munser of the U. S. Bureau of Home Economics in the Journal of Agricultural research.

These investigators studied three varieties of spinach, Virginia Savoy, Princess Juliana and Viroflay, each of which has a different kind of leaf, one being dark green, one pale green, and one bluish-green, and each having different degrees of curliness of leaf. All three had the same amount of vitamins A and B and nearly the same amount of vitamin C, judging from feeding tests on a small number of white rats.

Science News Letter, July 23, 1932

ARCHAEOLOGY

Old Greek Cosmetics Made By Modern Lead Paint Proces

Princeton Scientist Makes First Find of Face Powder Of the Kind that Causes Painter's Colic, Sometimes Deat

GRECIAN damsels of 400 B. C. had white face powder, but instead of being relatively harmless talc it was made of poisonous lead by a process now used in manufacturing white paint.

This has been established by a chemical analysis of the first white cosmetics ever recorded, found in a woman's grave in Corinth cemetery by Dr. T. Leslie Shear of the Department of Art and Archaeology of Princeton University.

The face powder was found in a small terra cotta toilet box which lay in the sarcophagus with a silver coin and other personal effects by Dr. Shear. Brought back to Princeton by Dr. Shear, the cosmetics were recently analyzed by Prof. William Foster of the Princeton University Department of Chemistry and found to be cubes of carbonate of lead. Grecian manufacturers, the analysis showed, had produced the product by basic methods similar to those today employed in the manufacture of white lead, a paint pigment.

The ancient processes of manufacturing the face powder which was know to the Greeks as "psimythion" and the Romans as "cerussa" are describe in classical works. Pliny, celebrated Lati author, described the production.

"It is made from very fine shaving of lead," Pliny wrote, "placed over vessel filled with the strongest vinegar by which means the lead shavings be come dissolved. That which falls int the vinegar is pounded and sifted afte which it is mixed with vinegar and the pounded into tablets and dried in th sun of summer.

"There is another method of produc ing it. Lead is thrown into jars fille with vinegar. The jars are kept close for ten days and a sort of mold on th surface is scraped off. The lead is pu into vinegar until the whole has bee consumed. The part scraped off is the pounded and sifted and put in shallow vessels. It is washed with fresh wate until all cloudy impurities have disap peared and then dried and made int tablets.

"This is the mildest of all prepara tions of lead used by females to whiten their complexion," the Latin commenta tor concluded, "but it is, however, like scum of silver, a deadly poison."

White lead is produced today commercially in essentially the same manner by the so-called Dutch process in which perforated sheets of lead are exposed to the action of acetic acid vapors, moisture and carbon dioxide.

An old Grecian poem warns against the use of cosmetic saying "never by use of psimythion can you make a Helen out of Hecuba."

Dr. Shear has returned to Princeton from Greece where, as field director of the excavations of the ancient market place at Athens, he spent the past season associated with the American School of Classical Studies.

Use of lead, an accumulative poison, as a face decoration continued until relatively recent times and there are records of beautified women eventually dying of painter's colic, a form of lead poisoning.

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PHYSIOLOGY

People Taller When Prone Than When Standing Erect

YOU ARE not so tall when you stand up as when you lie down. The amount you gain in length by stretching out on your back varies with height and sex, but it may be as much as an inch in some cases. This simple method of adding at least a fraction of a cubit to your stature was observed by Dr. Carroll E. Palmer in the course of an investigation at the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, for the purpose of finding a basis of comparison between the height tables of infants, which are of course based on prone measurements, and those of older children.

Young adolescent boys show less difference between standing and prone heights than do girls of the same age, Dr. Palmer found.

"Girls between the ages of twelve and twenty, and particularly the older girls were often shy and indifferent during the measuring," he explained. "The boys of this age, on the other hand, were always actively interested and not a little proud of their physical status. There is, at least, a suggestion that when these boys were asked to stand for measurement they stood, as a group, slightly 'taller' than the girls."

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KEEPING FAME IN THE FAMILY

RADIO

New Radiophone Expected To Increase Amateurs

Powerful Apparatus Can Now Be Built For Reasonable Sum And Operated By Anyone Possessing a License

ONE of the greatest wonders of radio is not the growth of broadcasting but the pioneering of short-pants amateurs that ushered in the era of radio. Long before those boom days of a decade ago, youngsters in age or spirit knew a kilocycle from an ohm. They were talking to each other over hundreds of miles in dots and dashes.

The wave bands that they once used have in part been preempted by commerce and government. Amateur communication channels are now out in that area where kilocycles are numbered in thousands and wavelengths have three digits or less. This has not subdued their enthusiasm, and the number of amateur radio stations increased 70 per cent. during the last two years in this country. There are some 50,000 amateur radio stations in all countries of the world. In code and by voice there are numerous interchanges of speech and code messages across international boundaries and oceans every night.

The increasing interest in amateur radio is due in part to the fact that it gives the opportunity of realizing the dream of having a private, personal radiophone. The American Radio Relay League has just worked out a simple and relatively powerful radiophone transmitter and receiver that can be built for less than a hundred dollars, which is a fraction of the cost of less modern equivalent sets.

It uses the newest radio tubes on the market, and it can be operated by anyone who is licensed to participate in amateur radio. Its transmitter delivers 25 watts in the 1715 to 2000 kilocycle band (150 to 175 meters).

The new low-cost radiophone sets will undoubtedly be built by hundreds of radio amateurs in the next few months. Outside the range of the ordinary broadcast receiver there will be a flow of friendly conversations.

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PHYSICS

Partnerships in Science and Marriage

A PARTNERSHIP in science and marriage, consisting of Mme. Irene Curie-Joliot right and Monsieur F. Joliot (right center), is winning fame in researches upon atomic disintegration. Mme. Curie-Joliot is a daughter of famous Mme. Marie Curie (left center) and Pierre Curie (left), who isolated radium and polonium in 1898 and later contributed greatly to the knowledge of radioactivity. The Curies won high honors for their researches and the collaboration of their daughter and her husband promises to continue the tradition.

Mme. Marie Curie is today the active head of the Radium Institute of the University of Paris and her researches are continuing. Pierre Curie was run over by a dray and killed instantly in 1906. The Curies divided the 1903 Nobel prize for physics with Henri Becquerel who discovered the radioactive properties of uranium, and Mme. Curie was awarded the 1911 Nobel prize for chemistry.

Mme. Curie-Joliot and M. Joliot have studied the way in which radioactive radiations pass through matter and recently they confirmed the existence of the new particle of matter called the neutron. (*SNL, Apr. 9, '32, p. 230; July 16, '32, p. 41.*)

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MEDICINE

Radio Fever Treatment Now Used For Boils and Arthritis

THE GROWTH of radiothermy, the new method of treating disease by electrically inducing fever in patients, was described by Dr. Willis R. Whitney, director of research for the General Electric Co., before the International Electrical Congress in Paris.

It is not difficult to believe that within the radio range many invisible assets await only further research to disclose them, Dr. Whitney said.

The treatment of arthritis, boils and carbuncles by radiothermy was named as an application of this method revealed by recent research. Radio heating has also been substituted for malaria, which was given paresis patients to induce a curative fever in them.

In the beginning of the research to find out what the high frequency waves could be used for, first liquids, then jellies and finally insects and animals were used instead of human patients.

"Small insects such as fruit flies, when submitted to fields of a few watts of radio energy, apparently died instantaneously," Dr. Whitney said, "and the deposition of moisture from their bodies on the walls of the tube near them indicated that death was due to overheating. When the same insects were exposed to the field in the dormant condition produced by a surrounding temperature of zero degrees Centigrade (32 degrees Fahrenheit), it was possible by careful manipulation to revive them and to make them fly about in zero air exactly as though midsummer temperatures prevailed."

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GENERAL SCIENCE

How to Keep Cool

By Slightly Changing Their Habits as Science Indicates People Can Be More Comfortable in Hot Weather

ONE of the first rules for keeping cool in very hot weather is to take things easy, including this business of getting or keeping cool. Keeping cool involves fighting both the heat of the air around your body and the heat your body itself is constantly producing. Scientists can tell you many ways to reduce the heat from both sources, however.

What to Do

For example, physical exertion makes your body's fires burn faster and produce more heat. That is why you should avoid it or do the heaviest physical labor early in the morning during a warm spell. Beyond a certain point, the heat production of your body cannot be reduced, since the heat is the accompaniment of the vital changes that are constantly going on in your body.

This heat production is at its lowest when you are resting in bed before breakfast. At this time the effects of food and physical activity are reduced to a minimum. The closer you can keep them that way during the day, the cooler you will be. Rest and light foods that are easily digested without producing much heat are in order when the temperature begins making hot weather records.

After you have kept your own heat production down to a minimum, you want to get the rest of it out of your body, in order to keep as cool as possible. When water evaporates it absorbs heat, and nature has given you an efficient aid to keeping cool in the sweat glands of your body. Men can stand higher temperature better than dogs, for instance, because men are able to perspire. At high temperatures, especially when working hard, the body gives off large amounts of water in perspiration.

If you want to augment this natural cooling process, apply lukewarm water to your skin and let it dry by evaporation. Take your summer bath lukewarm. The icy shower feels good and refreshes you, but at the same time it heats you up because it stimulates your body to produce more heat, just as heat production is stimulated to meet the challenge of an icy winter wind. The cooling effect of the lukewarm bath lasts longer.

Another aid to keeping cool is to keep the air moving by means of fans. This makes water or perspiration evaporate more quickly from your skin.

A muggy day with high humidity is uncomfortable because the air already holds all the water it can take up and the body cannot get cool by sweating off the heat.

What to Drink

Take your hot weather drinks warm or cool, but not iced, is the advice of scientists. In fact, physicians generally do not approve of iced drinks at any time of the year and one eminent surgeon does not allow his patients any ice or iced food or drinks at all.

As a matter of keeping cool, the hot drinks win because they make you perspire and the evaporation of the perspiration reduces the temperature of your body. Cold drinks, on the other hand, stimulate your body's heat production.

The normal temperature of the human body is 98.6 degrees Fahrenheit. The body is supplied with a regulatory mechanism to keep its temperature as nearly normal as possible. You will have better results in your keeping cool efforts if you work with this mechanism rather than against it. Since cold starts it working to warm up the body and heat directs its activity in the cooling direction, take your drinks rather warm than too icy, to get the best effect.

Besides the temperature of your summer beverages, consider their contents. Alcohol, for instance stimulates the body to increased activity and this is accompanied by increased heat production. Rich frappés, malted milks and the like are full of sugar and fat which are high fuel foods and make the body fires burn altogether too hot for comfort on a hot day.

For cooling purposes, drinks made from water and fruit or vegetable juices such as tomato and sauerkraut juices have the most lasting effect.

A pinch of salt in your glass of water is another thing that will help you to stand the heat. Scientists found that workers in hot coal mines and steel plants could bear the high temperatures better when they drank their water with this salt added. In hot weather your body loses not only water but salt by perspiration. You are reminded to replace the water by feeling thirsty, but you may not have realized that a large part of the exhaustion in hot weather was due to the loss of salt.

What to Eat

Certain foods when burned in the body produce more heat than others, just as coal burns with a hotter fire than wood. So for comfort during the hot spells this summer make up your menus from the groups that burn with less heat. Dietitians call them low fuel or low calory foods.

Foods that burn with a high heat production are sugars and starches, fats, meats and nuts. Vegetables and fruits produce much less heat when they are consumed in the body, so they are good to fill up on during the dog days. These foods, especially when served in salads have a cool, refreshing appearance.

Not everyone's digestive tract, however, can stand large amounts of raw vegetables and fruits. Cooked vegetables, and stewed fruits, the delectable compotes of European meals, add pleasantly to the variety of hot weather menus that will keep you feeling cool.

Ice cream, on the other hand, is a

Your Comfort

DEPENDS ON YOUR ANSWER

Lukewarm OR icy water?
Skirts OR trousers?
Ice cream OR fruit?
Salty OR fresh water?
Stiff straw OR Panama?

WHICH TO DO IN ORDER TO KEEP COOL IN THE SUMMERTIME, AND WHY, IS EXPLAINED IN THIS ARTICLE

very nourishing dish but not so cooling as it at first appears. Since it is made largely from sugar and cream it belongs in the group of high fuel foods that heat you up after you have eaten them. Water ices and sherbets are not so bad, for they lack the cream or milk fat of ice cream, frozen custards or puddings.

Sandwiches are another food commonly eaten in summer which is cooler to prepare than to eat. The bread and butter are both heating foods. The sandwich fillings are apt to be sliced or devilled meats or cheese which are high fuel foods. And the salad sandwiches have lots of heat in the fat or oil of their mayonnaise dressings.

What to Wear

Panama hats and loosely fitting clothing made of porous material, preferably cotton or linen, make up the ideal summer costume. At least, they do according to the dictates of science for comfort, regardless of what fashion has to say.

Women who go in for beach pajamas, slacks or other feminine forms of the trouser are giving up part of their costume which added much to their coolness. Skirts, if they are not too numerous or too voluminous, are much better hot-weather garments than trousers. This is evidenced in part by the ancestral lines of the two types of garment. Trousers were invented, apparently, in the cooler parts of the world, such as the cold northern lands around the Baltic and the uplands of Persia and China. Skirts were worn by both men and women in ancient and torrid Egypt and Babylonia, and they are still worn by brown and black peoples in the tropics who take the trouble to wear any clothes at all. Even the burnoose of the Bedouin, while not exactly a skirt, does embody the idea of getting the principal garment as loose as possible, catching quantities of cooling air under its folds.

Women's clothing, with its lack of tight collars and belts and its thinner materials, has always been envied by the sweltering men. The men can at least be even in the matter of headgear without being the least unconventional, however. A Paris scientist has now found that the cool, well-ventilated crown of the Panama hat is, like the movie theaters, "Twenty degrees cooler inside."

This Parisian actually measured the temperatures inside different kinds of headgear on a day when the mercury stood at 97 degrees Fahrenheit. Inside the Panama it was only 77 degrees. The stiff straw hat ran second with an inside temperature of 79 degrees. There was a wide difference between this and the soft felt hat, however, which reduced the temperature only about half as much as the Panama, to a level of 86 degrees. At the bottom of the list was the jaunty sports cap which actually raised the temperature of the head a degree and a half to 98.6 degrees. This is because the cap places a layer of cloth, generally non-ventilating wools, flat on the head without the ventilating space that even a derby allows.

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ZOOLOGY

Frogs of Mexican Forests Learning to Fly and Climb

A CURIOUS species of frog which can fly, or, to be more accurate, glide through the air by spreading its elongated hind legs, thus coming gracefully to earth from heights of as much as 90 feet, is among those found in the tropical forests of Mexico by Dr. Remington Kellogg of the United States National Museum and described by him in a Smithsonian Institution report.

These tree frogs are difficult to find, for they keep out of the way of the human explorer and can even change the color of their bodies like chameleons to match their surroundings.

Various members of the family of tree frogs show different stages of evolutionary adaptation to their home in the trees. Besides the "flying" species, there is another which is learning to climb and cling to limbs of trees through the development of adhesive disks on the ends of the fingers and toes.

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The green outer leaves of California iceberg lettuce are found to be 30 or more times richer in vitamin A than the whitest leaves from the center of the same heads.

GENERAL SCIENCE

Foreign Scientists To Join Chicago Fair Meetings

OVER 70 eminent foreign men of science have been invited to come to Chicago next summer to join with American scientists in celebrating the Century of Progress World's Fair at the time of the meeting of the American Association for the Advancement of Science, June 19 to 30, 1933.

A committee of the American Association for the Advancement of Science, in cooperation with the officials of the exposition, have issued invitations. Funds to defray the travel expense of the foreign scientists have been provided by the exposition.

The Century of Progress will display to the public through dynamic exhibits the basic contributions of science to industry and civilization. The scientific meetings in June, 1933, are expected to reveal new research results upon which future progress will be built.

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PALEONTOLOGY

100,000-Year-Old Woman And Child Found in Hungary

BONES of a woman and child who lived in the days of Neanderthal man have been found in a mountain cave near Eger, Hungary. Discovery of these cave dwellers of 100,000 years ago was made by the chief state geologist, Dr. Ottokar Kadics.

Dr. Kadics was led to excavate when stone implements were found near the cave about a year ago. He named it the "Cave of the Hor Valley."

Describing his discovery, Dr. Kadics told of finding in the cave the bones of cave bears, cave lions, wolves, polar foxes, and other polar animals. These were animals of the ice age.

"Working on," he continued, "we found bones of a woman and child. Examining them, I concluded that I had found remains of the Homo primigenius. The woman and child lived about 100,000 years ago and were contemporaries of Neanderthal man.

"The remains of the woman are a breast-bone, part of the skull, a jaw with 14 teeth, a chin, and shin bones. We are working on, of course, hoping to find more remains of the Homo primigenius. Meanwhile, my Budapest colleagues examine the skeletal remains."

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ENGINEERING

Drop of Oil Atomized Into 100,000,000 Particles

See Front Cover

A TINY drop of fuel oil no larger than the head of a safety match has been torn into 100,000,000 particles at the research laboratory of the General Electric Co., Schenectady, N. Y., it is announced.

Intensely hot combustion results at high efficiency. Engineers are expected to apply the discovery to a new oil furnace.

To effect this high temperature combustion, oil under pressure is brought into a direct head-on impact with air under approximately the same pressure, causing the superfine atomization and facilitating easy conversion of small particles into a gaseous hydrocarbon by heat.

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PUBLIC HEALTH

Pellagra Deaths Decrease In Spite of Hard Times

DEATHS from pellagra, often called the "hard times disease" because it is caused by a typical hard times diet which lacks certain vitamins, have, surprisingly, decreased during the recent hard times. A decline in the pellagra deathrate during 1930 and 1931 is reported in the current issue of the Statistical Bulletin of the Metropolitan Life Insurance Company.

Figures of the U. S. Public Health Service for 42 states also show a decline in pellagra deaths during these two years. Public health officials point out, however, that patients do not usually die of pellagra during the first or second year they have the disease. Consequently many cases may have developed within the last year or so which have not yet shown up in the mortality figures. Likewise, more is known about how to prevent or to treat the disease now than during previous "hard times." For example, several state health departments in the South are distributing free yeast, which is one good preventive of pellagra.

"The facts do not show that the higher mortality rates always come when business is at a low ebb," the insurance company's statisticians point out.

The pellagra deathrate declined during the World War when employment was general and high wages prevailed. After 1924, when the lowest deathrate for the twenty-one-year period from 1911 to 1931 was recorded, the pellagra deaths began increasing.

"But in 1930 and 1931, in the face of widespread economic disturbances, deaths from pellagra declined quite in line with the general deathrate," the report concludes.

Pellagra may be prevented by vitamin G, found in fresh lean meat, milk, yeast and certain vegetables. Except for yeast, these are expensive foods and among the first to be dropped from the diet when finances run low. The typical hard times diet of the poor in the South, meal, molasses and salt pork, is entirely lacking in the anti-pellagra vitamin.

Digestive and nervous disturbances, skin irritations, extreme weakness, convulsions and even insanity are characteristic of the disease.

Science News Letter, July 23, 1932

ARCHAEOLOGY

Finds Ruins of American Home Dated 797 A. D.

FIRE-SWEPT ruins of a house containing timbers cut in the year 797 A. D. have been discovered at an Indian site near Allentown, Arizona, is the report just received at the Bureau of American Ethnology, Washington, D. C., from Dr. Frank H. H. Roberts, Jr., of its staff. The house takes rank as the oldest dated ruin in the Southwest.

The house was a pit house, built largely under ground, with an entrance through the roof. Such homes must have been fire-traps. The fire which destroyed the place forced the inhabitants to flee without salvaging their belongings. Dr. Roberts found everything still inside, including much pottery.

Antiquity of the house was determined by means of four timbers on the floor. The dates of the tree rings were read according to the tree-ring calendar worked out by Dr. A. E. Douglass of the University of Arizona. Dates previously established as the oldest in the Southwest were 919 A. D. from a beam found at Pueblo Bonito, then 861 A. D. from a piece of timber in Una Vida, both pueblos being in New Mexico.

Science News Letter, July 23, 1932

IN SCIE

ENTOMOLOGY

Butterfly's Legs Keener Than Man's Tongue

BUTTERFLIES' legs contain the insects' organs of taste, and they are far better than the human tongue at the job of detecting the presence of sugar.

At the University of Minnesota, Dr. Almeda Louise Anderson has been experimenting with a number of butterfly species, testing each for the most dilute solution of common sugar that would make it "put out its tongue," or more accurately, extend its proboscis. The taste "threshold" for different butterflies, or even for the same individual at different times, varied a good deal; but the most sensitive tasting legs were found finally on a common red-and-black monarch butterfly. They could detect sugar in a solution 1200 times more dilute than the weakest that would taste sweet to a human tongue.

A full statement of Dr. Anderson's results is to be published soon in *The Journal of Experimental Zoology.*

Science News Letter, July 23, 1932

CHILD STUDY

Children Growing Regularly Have Better Health

DO NOT worry if your child does not show a gain in weight every month in the year. But watch him to see that he does not go for long periods without growing.

Dr. Clair E. Turner, of the Health Education Research Laboratory of the Massachusetts Institute of Technology, and associates, Cambridge, Mass., found in a study of 1,000 school children that fewer than twenty of them gained weight every month of the school year.

When children who failed to show any gain in three months were compared with those gaining regularly, three times as many were found to have important unhygienic habits, twice as many had serious physical defects, and twice as many had had recent illness.

Science News Letter, July 23, 1932

E FIELDS

SEISMOLOGY

Another Earthquake Located Off Mexican Coast

ANOTHER in an unusual series of earthquakes visited Mexico on Tuesday afternoon (July 12) when a sharp shock centered in the Gulf of California southwest of the boundary between the states of Sonora and Sinaloa. Telegraphic reports to Science Service from seismological observatories interpreted by the U. S. Coast and Geodetic Survey allowed the location of the center of the earthquake. The earthquake recorded on the seismographs was not the same as the one which is reported to have caused damage some 450 miles further south.

The epicenter of the quake was determined as 25 degrees north latitude and 110 degrees west longitude, and it occurred at 2:24 p. m. E. S. T.

Science News Letter, July 23, 1932

PUBLIC HEALTH

Not Alfalfa, But Drainage, Prevents Malaria

ALFALFA in itself is no preventive of malaria, but the drainage necessary to its cultivation in wet regions subject to floods may cause a reduction in the number of malaria cases in the vicinity, Dr. W. K. Stratman-Thomas of the International Health Division of the Rockefeller Foundation found in a survey in Mississippi.

The study was undertaken to determine whether there was any foundation for the assumption that the absence of malaria in certain areas of Egypt and other places was due to an antagonism between malaria and the alfalfa or other leguminous plants grown in those regions. The survey was conducted in Washington and Bolivar counties, Mississippi, among 1,858 tenant farmers.

The survey showed definitely that the amount of malaria in a vicinity is related to the amount of standing water in which the malaria mosquitoes can breed. People living adjacent to both standing water and alfalfa were not protected from malaria.

However, alfalfa will not grow well in very wet soil. Drainage is required in low-lying countries to make it grow. Therefore, wherever a decline in malaria coincides with the planting of alfalfa, it is due directly to the proper drainage necessary to obtain the best conditions for the cultivation of the alfalfa, Dr. Stratman-Thomas concluded in his report to the *American Journal of Hygiene*.

Science News Letter, July 23, 1932

ENTOMOLOGY

Wasp-Nest Census Taken; Only 402 Inhabitants Found

HOW MANY WASPS are there in a wasp-nest?

Anyone who has ever had the misfortune to disturb one of these explosively "touchy" insect cities would undoubtedly make an estimate of millions; but an actual count, made by Barbara J. Betz of the School of Hygiene and Public Health, The Johns Hopkins University, shows only 105 full-grown insects, with larvae and pupae in numbers to bring the total count up to 402. However, since the nest was taken in autumn, when the workers normally die off, it is considered probable that the summer population of the nest would be considerably larger.

The nest was an unusually large "paper-wasp" nest, inhabited by the common black-and-white hornets. It was brought in on a cold night, and pickled whole in alcohol for a year before it was taken apart for study.

The count of insects in all stages of development was small as compared with the total number of cells in the five paper combs which it contained: 402 individuals as against 3,195 cells. It is noteworthy also that most of the adult population consisted of queens and drones, with only 17 adult workers: this is a characteristic of the autumn condition of a wasp-nest, for then the workers are dying off, while the queens are mating and preparing for the winter sleep.

In the same nest Miss Betz found four foreign insects, including the common housefly, a true bug and a beetle. None of these species is parasitic on the hornets, nor habitually a sharer of its dwelling. It is assumed therefore that they were either accidental invaders or had been killed and brought home by the hornets for food.

Science News Letter, July 23, 1932

ZOOLOGY

Baby Orang Dies of Disease Thought Peculiar to Man

THE FIRST case of sudden death due to enlargement of the thymus gland in any animal lower than man in the biologic scale, has occurred in a baby orang-utan, Dr. Herbert Fox, pathologist of the University of Pennsylvania, has just reported.

Many sudden, otherwise unaccountable deaths in children, and some in adults have been attributed to enlargement of this gland in the chest. The theory is that when the gland enlarges it may interfere with the heart action, compress the windpipe or obstruct the large arteries and veins in chest and neck. In the baby orang, it was the heart that was embarrassed by the enlarged thymus. The thymus is part of the lymph gland system to which belong also the adenoids and tonsils. The sheep, which has the largest thymus of any animal, known as the sweetbreads, does not seem to be disturbed by its size.

Science News Letter, July 23, 1932

PHYSICS

Light Speed Not Changing, Investigation Indicates

NEW EVIDENCE that the velocity of light is a constant and not growing less with the passage of time is obtained by Dr. Olin C. Wilson of Mt. Wilson Observatory, Pasadena, through a study of the measurements of the standard meter bar made in 1892 and 1906.

Dr. Wilson looked into the matter of the constancy of light's speed because of previous reports by M. E. J. Gheury de Bray that direct measurements of the velocity of light tended toward smaller values in more recent years. Dr. Wilson therefore compared two measurements of the standard meter, the world's basic reference of length, made in terms of the wavelength of the red calcium line of the spectrum at an interval of fourteen years. No change was found. He also pointed out that variations in the velocity of light with time would cause curious results when observations are made from time to time with a prism spectrograph, due to the relation of index of refraction to velocity of light.

Dr. Wilson made his report to the British scientific journal, *Nature*, which had published Mr. de Bray's reports.

Science News Letter, July 23, 1932

PHYSICS

Heat Is Motion

"A Classic of Science"

Heat as the Kinetic Energy of Molecules in Motion is Explained by a Great 19th Century English Physicist

THEORY OF HEAT. By J. Clerk Maxwell. London: Longmans, Green, and Co. 1871.

IT IS MANIFEST that a body may be hot without any motion being visible, either of the body as a whole, or of its parts relatively to each other. If, therefore, the body is hot in virtue of motion, the motion must be carried on by parts of the body too minute to be seen separately, and within limits so narrow that we cannot detect the absence of any part from its original place.

The evidence for a state of motion, the velocity of which must far surpass that of a railway train, existing in bodies which we can place under the strongest microscope, and in which we can detect nothing but the most perfect repose, must be of a very cogent nature before we can admit that heat is essentially motion.

Let us therefore consider the alternative hypothesis—that the energy of a hot body is potential energy, or, in other words, that the hot body is in a state of rest, but that this state of rest depends on the antagonism of forces which are in equilibrium as long as all surrounding bodies are of the same temperature, but which as soon as this equilibrium is destroyed are capable of setting bodies in motion. With respect to a theory of this kind, it is to be observed that potential energy depends essentially on the relative position of the parts of the system in which it exists, and that potential energy cannot be transformed in any way without some change of the relative position of these parts. In every transformation of potential energy, therefore, motion of some kind is involved.

Now we know that whenever one body of a system is hotter than another, heat is transferred from the hotter to the colder body, either by conduction or by radiation. Let us suppose that the transfer takes place by radiation. Whatever theory we adopt about the kind of motion which constitutes radiation, it is manifest that radiation consists of motion of some kind, either the projection of the particles of a substance called caloric across the intervening space, or a wave-like motion propagated through a medium filling that space. In either case, during the interval between the time when the heat leaves the hot body and the time when it reaches the cold body, its energy exists in the intervening space in the form of the motion of matter.

Cold Body Unnecessary

Hence, whether we consider the radiation of heat as effected by the projection of material caloric, or by the undulations of an intervening medium, the outer surface of a hot body must be in a state of motion, provided any cold body is in its neighborhood to receive the radiations which it emits. But we have no reason to believe that the presence of a cold body is essential to the radiation of heat by a hot one. Whatever be the mode in which the hot body shoots forth its heat, it must depend on the state of the hot body alone, and not on the existence of a cold body at a distance, so that even if all the bodies in a closed region were equally hot, every one of them would be radiating heat; and the reason why each body remains of the same temperature is, that it receives from the other bodies exactly as much heat as it emits. This, in fact, is the foundation of Prevost's Theory of Exchanges. We must therefore admit that at every part of the surface of a hot body there is a radiation of heat, and therefore a state of motion of the superficial parts of the body. Now this motion is certainly invisible to us by any direct mode of observation, and therefore the mere fact of a body appearing to be at rest cannot be taken as a demonstration that its parts may not be in a state of motion.

Hence part, at least, of the energy of a hot body must be energy arising from the motion of its parts, or kinetic energy.

The conclusion at which we shall arrive, that a very considerable part of the energy of a hot body is in the form of motion, will become more evident when we consider the thermal energy of gases.

Every hot body, therefore, is in motion. We have next to enquire into the nature of this motion. It is evidently not a motion of the whole body in one direction, for however small we make the body by mechanical processes, each visible particle remains apparently in the same place, however hot it is. The motion which we call heat must therefore be a motion of parts too small to be observed separately; the motions of different parts at the same instant must be in different directions; and the motion of any one part must, at least in solid bodies, be such that, however fast it moves, it never reaches a sensible distance from the point from which it started.

We have now arrived at the conception of a body as consisting of a great many small parts, each of which is in motion. We shall call any one of these parts a molecule of the substance. A molecule may therefore be defined as a small mass of matter the parts of which do not part company during the excursions which the molecule makes when the body to which it belongs is hot. . .

Kinetic Theory of Gases

A gaseous body is supposed to consist of a great number of molecules

The Eclipse of 1868

was noted for the discovery of a method of seeing prominences on the sun at any time.

JANSSEN AND LOCKYER

made the discovery independently. Their reports will form

THE NEXT CLASSIC OF SCIENCE

JAMES CLERK MAXWELL

—physicist, who made many fundamental discoveries in the fields of heat and electromagnetism.

moving with great velocity. During the greater part of their course these molecules are not acted on by any sensible force, and therefore move in straight lines with uniform velocity. When two molecules come within a certain distance of each other, a mutual action takes place between them, which may be compared to the collision of two billiard balls. Each molecule has its course changed, and starts on a new path. I have concluded from some experiments of my own that the collision between two hard spherical balls is not an accurate representation of what takes place during the encounter of two molecules. A better representation of such an encounter will be obtained by supposing the molecules to act on one another in a more gradual manner, so that the action between them goes on for a finite time, during which the centres of the molecules first approach each other and then separate.

We shall refer to this mutual action as an Encounter between two molecules, and we shall call the course of a molecule between one encounter and another the Free Path of the molecule. In ordinary gases the free motion of a molecule takes up much more time than that occupied by an encounter. As the density of the gas increases, the free path diminishes, and in liquids no part of the course of a molecule can be spoken of as its free path.

In an encounter between two molecules we know that, since the force of the impact acts between the two bodies, the motion of the centre of gravity of the two molecules remains the same after the encounter as it was before. We also know by the principle of the conservation of energy that the velocity of each molecule relatively to the centre of gravity remains the same in magnitude, and is only changed in direction.

Distribution of Velocity

Let us next suppose a number of molecules in motion contained in a vessel whose sides are such that if any energy is communicated to the vessel by the encounters of molecules against its sides, the vessel communicates as much energy to other molecules during their encounters with it, so as to preserve the total energy of the enclosed system. The first thing we must notice about this moving system is that even if all the molecules have the same velocity originally, their encounters will produce an inequality of velocity, and that this distribution of velocity will go on continually. Every molecule will then change both its direction and its velocity at every encounter; and, as we are not supposed to keep a record of the exact particulars of every encounter, these changes of motion must appear to us very irregular if we follow the course of a single molecule. If, however, we adopt a statistical view of the system, and distribute the molecules into groups, according to the velocity with which at a given instant they happen to be moving, we shall observe a regularity of a new kind in the proportions of the whole number of molecules which fall into each of these groups.

And here I wish to point out that, in adopting this statistical method of considering the average number of groups of molecules selected according to their velocities, we have abandoned the strict kinetic method of tracing the exact circumstances of each individual molecule in all its encounters. It is therefore possible that we may arrive at results which, though they fairly represent the facts as long as we are supposed to deal with a gas in mass, would cease to be applicable if our faculties and instruments were so sharpened that we could detect and lay hold of each molecule and trace it through all its course. . . .

"Maxwell's Demon"

Before I conclude, I wish to direct attention to an aspect of the molecular theory which deserves consideration.

One of the best established facts in thermodynamics is that it is impossible in a system enclosed in an envelope which permits neither change of volume nor passage of heat, and in which both the temperature and the pressure are everywhere the same, to produce any inequality of temperature or of pressure without the expenditure of work. This is the second law of thermodynamics, and it is undoubtedly true as long as we can deal with bodies only in mass, and have no power of perceiving or handling the separate molecules of which they are made up. But if we conceive a being whose faculties are so sharpened that he can follow every molecule in its course, such a being, whose attributes are still as essentially finite as our own, would be able to do what is at present impossible to us. For we have seen that the molecules in a vessel full of air at uniform temperature are moving with velocities by no means uniform, though the mean velocity of any great number of them, arbitrarily selected, is almost exactly uniform. Now let us suppose that such a vessel is divided into two portions, A and B, by a division in which there is a small hole, and that a being, who can see the individual molecules, opens and closes this hole, so as to allow only the swifter molecules to pass from A to B, and only the slower ones to pass from B to A. He will thus, without expenditure of work, raise the temperature of B and lower that of A, in contradiction to the second law of thermodynamics.

Science News Letter, July 23, 1932

RADIO

The Science Service radio address next week will be on the subject,

EARTHQUAKES: WHAT ARE THEY?

by

Dr. J. B. Macelwane

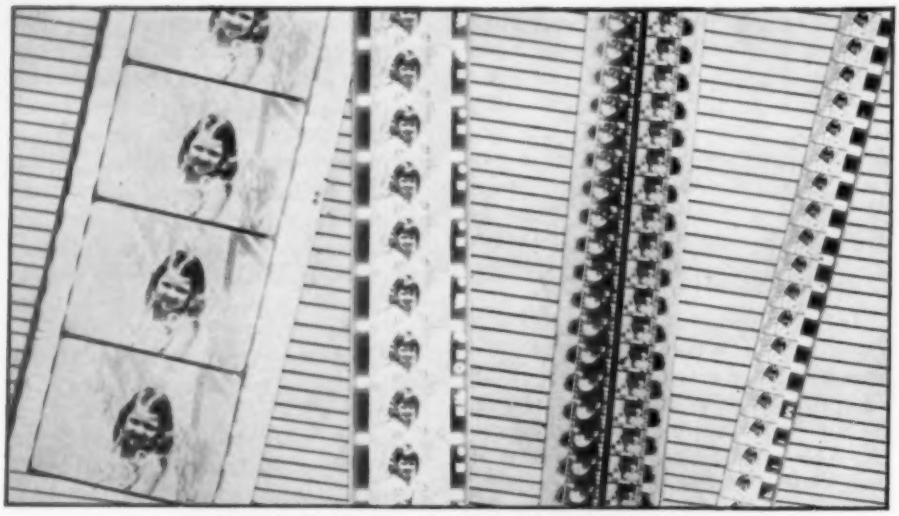
Professor of Geophysics at St. Louis University, St. Louis, and president of the Jesuit Seismological Association

FRIDAY JULY 29

at 2:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System



EVOLUTION OF MOVING PICTURE FILM

The introduction of a new moving picture film for amateurs again reduces the size of the frame from which a picture can successfully be projected and enlarged upon a screen. When ready for the projector, this new film is only eight millimeters wide—exactly half the width of the present amateur film and less than one-forth that of film used in theatres. Each film is reproduced above in full size. The largest (left) is the professional film, the next (to the right) is the amateur size that has been used for a number of years, right of center is the new film as it is run through the camera and at the extreme right is the same strip cut down the middle to a width of eight millimeters for the projector.

PHOTOGRAPHY

Pictures of Stars Lead to New Miniature Movie Film

FINER grained photographic emulsion developed for recording sharp images of distant stars has allowed the commercial perfection of an eight millimeter amateur motion picture film that takes four pictures upon the film space of one ordinary amateur 16 millimeter movie frame.

Although experimentally perfected, the new type amateur motion picture camera, film and projector has not yet been put on the market by the Eastman Kodak Company in whose laboratories it has been developed.

The quadrupling of the number of images on a foot of film is accomplished by running a 16 millimeter film through a special type of camera twice. The camera takes twenty-five feet of film and is sufficiently small to fit into the coat pocket. The first time through one half of the width of the film is exposed. Then the film is changed from one reel to the other and the other half is exposed. Each picture taken is only half the depth of an ordinary 16 millimeter film image. Twenty-five feet of the new film will therefore contain as many pictures as a hundred feet of the conventional amateur movie film and will run four minutes.

When the film is processed it is split down the center and the two pieces spliced end to end. Fifty feet of film, eight millimeters wide with perforations down one side, is delivered to the amateur photographer who must utilize a new eight millimeter projector in showing it.

The new eight millimeter movies are made possible by very fine grained sensitive photographic emulsion that resulted from a series of developments, among them the making of special films for astronomical use. The development of "kodacolor" amateur movie film, the research striving for sound film that does not distort, and the commercial production of supersensitive 16 millimeter movie film, also contributed to the perfection of the new movies.

High optical and mechanical precision is necessary in the eight millimeter movie apparatus. The fast anastigmat lens of the camera is the size of a small pea but is made of three pieces of glass each separately ground on each side with extreme accuracy.

The film image of the new eight millimeter movies is less than a twentieth of the area of the professional 35 millimeter movie film image.

Science News Letter, July 23, 1932

GEOGRAPHY-BOTANY

Boy Scout-Naturalists Map Craters of Volcano

By PROF. H. E. STORK, of Carleton College, Director of Scout-Naturalist Expedition in Costa Rica. Dispatch from Cartago, Costa Rica.

THREE Boy Scout-Naturalists on a three months scientific expedition in Costa Rica, under the direction of the writer, have mapped the craters of the volcano Irazen.

The boys are combining adventure with the collection of insect and plant specimens. Their first project has been a week's camping trip on the volcano, which rises to a height of almost 12,000 feet.

One crater inside the large crater is now active, giving forth a great volume of steam and sulphurous fumes. The craters mapped by the Scouts show considerable changes from conditions as seen in maps made twenty years earlier. By excavating on the south and east sides of the mountain, the Scouts were able to read something of the long past history of the volcano's activity.

The Scout-Naturalists also assisted the writer in making a study of the plant life of this mountain. In the flora are a number of species found nowhere else.

The three Scouts on the Costa Rican expedition were selected from the Scout-Naturalist expeditions, which have done natural history work in the National Parks since 1929. The expeditions, consisting of selected Eagle Scouts, were begun in 1929 by Ansel F. Hall, chief naturalist of the National Parks, who believed that the organization of Boy Scouts of America might thus contribute to the advancement of science.

Science News Letter, July 23, 1932

A salad crop new to most gardeners is Chinese cabbage.

Australians are the world's greatest fruit eaters, judging by the per capita consumption of oranges and other fruits.

PUBLIC HEALTH

New Drug Addiction "Cure" Protested by N. Y. Physicians

Local Medical Society Says Sodium Rhodanate Treatment Was Issued Prematurely and Failed in Over 100 Cases

SODIUM rhodanate or thiocyante, widely heralded as a new "cure" for narcotic drug addiction and alcoholism, has failed in more than 100 cases of drug addiction, the Tompkins County Medical Society at Ithaca, N. Y., has reported to the American Medical Association. The report is contained in a formal protest against what the society considers premature publication of the new method of treatment, and is signed by Drs. H. B. Sutton, N. S. Moore and B. F. Hauenstein, members of the special narcotic committee of the medical society.

The use of sodium rhodanate in the treatment of drug addiction was first suggested by Prof. Wilder D. Bancroft of Cornell University and his associates in the Proceedings of the National Academy of Sciences in December, 1931. In this report successful use of the method on dogs was described. The theory of sodium rhodanate treatment is that in morphine addiction the colloidal state of the protein substances of the brain becomes too thick and sodium rhodanate thins it. The first report of successful use of this drug in treating a human case of morphine addiction was made by Prof. Bancroft in the Proceedings of the National Academy of Sciences for January, 1932. Successful use of the method in six more cases was reported at the meeting of the National Academy in April.

The Tompkins County Medical Society freely admits that the theory of the sodium rhodanate treatment of drug addiction is worthy of consideration and that the drug may have some merit. The society's criticism is based on the fact that success was claimed for the new treatment after using it on only one case and without adequate controls. In scientific medicine the value of new measures is tested by comparing their effects on one or more cases with the effects of either no treatment at all or of the standard methods of treatment.

Although the original experiment with a single case was a success, the person on whom it was tried had been "cured" six times before, the society found.

"Regarding this incident," the protest reads, "the Medical Society of Tompkins County, N. Y., feels that to herald to the world as a cure a substance that is apparently successful in one case is unscientific, even though this demonstrates the correctness of the hypothesis regarding its action."

Likewise the society feels that none of the men who investigated the action of the new method has had sufficient experience with drug addiction to be able to judge the value of the new treatment. Prof. Bancroft himself is not a physician.

"There are many physicians in touch with some of the details of the past experiments with the rhodanate who feel that far too much is claimed for this substance," the protest concluded.

Science News Letter, July 23, 1932

ANTHROPOLOGY

Anthropologists, Not Beauty Specialists, Sort Eyebrows

ANTHROPOLOGISTS have at last joined the "beauticians" in an interest in the shape of ladies' eyebrows—and the eyebrows of men and children, too, for that matter. A study made of the subject by Prof. V. Suk and Dr. F. Rozprym of the Masaryk University at Brno, Czecho-Slovakia, and said to be the first ever made by anthropologists, has been reported in the British journal *Nature*.

The form of eyebrows varies greatly, the scientists found, but they can be classified into 11 types. First there is the "spreading" type which is quite common, perhaps accounting for the present vogue of eyebrow-plucking. Of the 470 cases measured, 157 were of this type.

Then there is the "even" type where the growth is even on each side. There were only 96 cases of this type, and it occurs 20 times as frequently in women as in men.

If your eyebrows are "peaked," you may be especially proud, for this type is very rare, occurring only 12 times all told.

Eyebrows which are thick near the nose and thin toward the outer edge are a femine form. They are to be seen on the feminine face three times as often as on men. Eyebrows in a whorl from the nose outward are also feminine.

Those long curved eyelashes, which are so greatly admired, are unfortunately often lost by children as they approach maturity. Short, straight lashes are given impartially to men and women with equal frequency. Short, curved lashes are most rare, occurring very seldom on women, never on children. Two apparently abnormal types of eyelashes were found, one bent inward toward the eye, and the other long and straight, but hooked at the end.

Science News Letter, July 23, 1932

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PUBLIC HEALTH

Yale Experiments Show Virus Diseases Carried Through Air

THE OLD BELIEF that diseases are carried through the air is substantiated for at least one group of contagious diseases in recent studies made by Dr. Merl G. Colvin of the Yale Medical School. Ordinarily it is supposed that micro-organisms will not travel through the atmosphere unless attached to droplets of moisture so that an individual must come comparatively close to an infected person or come in direct contact with something with which the patient has had contact in order to contract the disease.

The group of diseases known as the virus diseases, of which chicken pox and measles are common examples, are supposedly caused by minute ultramicroscopic forms so small that the ordinary microscope does not magnify enough to show them. The viruses themselves are difficult to handle in the laboratory. Bacteriophage, however, which approximates the size of the viruses, is comparatively easy to handle and so has been used by Dr. Colvin as a test agent in a study of the spread of virus.

Dr. Colvin has been able to measure the distances which bacteriophage travels through the air, the speed at which it travels, and finds, contradictory to the common belief, that it traveled some 35 feet from his laboratory in five minutes. Not only that but bacteriophage lurked in the dust of his room for at least 18 days. After a thorough sweeping and mopping of the room there was more phage in the air than before, which, according to Dr. Colvin, shows the inefficiency of certain modern cleaning methods.

While there are differences between bacteriophage and viruses, Dr. Colvin feels that it is more than probable that virus diseases may be air-born and that this may in part explain why they are so very contagious.

Science News Letter, July 23, 1932

The Eclipse of Aug. 31, 1932

(*total over portions of New England and Canada*)

—has commandeered a whole issue of the Science News Letter. So next week's News Letter, for July 30, will be the

ECLIPSE EDITION

Special articles and numerous illustrations will tell you how to make the most of a very infrequent occasion.

WATCH FOR YOUR COPY

ORNITHOLOGY

NATURE RAMBLINGS
by Frank Thone

Bobwhite

OUT WEST, grasshoppers are helping themselves to the grain. Bobwhites eat the grasshoppers. Presently we shall eat the bobwhites. Thus do we get a little of our own back again.

In ancient times, when people believed that they and other ceatures partook of the nature of the food they ate, the bobwhite would certainly have had his behavior when hunted ascribed to the leaping insects that form a part of his diet, so close does he lie while you approach and so suddenly and unexpectedly does he fly when finally flushed. He needs a quick gun to get him.

It is sad, but true, however, that in some parts of the country the bobwhite is losing ground. Too thorough cultivation in parts of the West, and his own inability to withstand severe cold in New England, is thinning him out. Game refuges and stiffer closed seasons for a term of years may help him to come back where the plow has conspired with the gun to cut him down: but his increasing absence from New England seems to be more a matter of his own choice, for cultivation has been decreasing in that area.

There is nothing to do when he goes but replace him with hardier, more prolific birds, such as the European pheasant. But old-timers think little of the pheasant as compared with their favorite, and oppose letting the alien in while the bobwhite has any chance at all of recovering. Artificial propagation has been proposed, but has not as yet proved practical, partly because the birds do not stand penning at all well, and partly because they are so expensive—$10 to $15 apiece is said to be no unusual price. The best we can do, it seems, is to help Nature to take her own course.

Science News Letter, July 23, 1932

• First Glances at New Books

Additional Reviews on Page 60

Archaeology

SEVENTY YEARS IN ARCHAEOLOGY—Sir Flinders Petrie—*Holt,* 307 p., $4. The autobiography of an eminent archaeologist, who has had a busy and exciting career and at the age of 79 is still working. At eight years, he was telling a playmate the correct way to excavate a Roman villa. In his teens he collected coins for the British Museum. At 27, he surveyed the Great Pyramid, and from then on he has been in the thick of archaeological campaigns in Egypt and the Near East. Sir Flinders' account of his expeditions will interest the general reader and the archaeologist, alike.

Science News Letter, July 23, 1932

Psychology

I WAS A STUTTERER—James Sonnett Greene and others—*Grafton,* 227 p., $1.50. A compilation of "testimonials" indicating how the stutterer suffered and how he secured remarkable relief or cure at the clinic of Dr. Greene. These biographical sketches, all to much the same effect, are interspersed and prefaced by comments by Dr. Greene in which he gives his own theories of the cause and cure of this painful defect.

Science News Letter, July 23, 1932

Entomology-Plant Pathology

INSECTS AND DISEASES OF ORNAMENTAL TREES AND SHRUBS—E. P. Felt and W. H. Rankin—*Macmillan,* 506 p., $5. Combining within one cover the information which all gardeners, professional and amateur alike, desire but must usually seek in separate books, this new manual will unquestionably find a ready welcome. Following general discussions of the nature of insect infestations and fungus diseases, with methods of combating them, the authors take up a more detailed treatment, arranged by host plants.

Science News Letter, July 23, 1932

Anatomy

MANUAL OF DISSECTION—George B. Jenkins—*Lea and Febiger,* 291 p., $3. For students of anatomy, to be used in connection with a standard textbook and atlas, consequently without illustrations.

Science News Letter, July 23, 1932

Public Health

RURAL SCHOOL NURSING: AN OUTLINE FOR RED CROSS PUBLIC HEALTH NURSES—*American National Red Cross,* 151 p., 50c. This book is not intended for city school nurses but for the nurse working single-handed in a rural community. It should be interesting to all rural school nurses, even if not associated with the Red Cross. Emphasis is placed on the fact that the rural school nurse is a public health nurse first and a school nurse second.

Science News Letter, July 23, 1932

Horticulture

GARDEN MAINTENANCE—H. S. Ortloff and H. B. Raymore—*Macmillan,* 302 p., $2.50.A very worthy addition to Macmillan's already long list of good garden books. Most garden manuals now in existence stress especially the building of the garden and the planting of its inhabitants; this one concerns itself with what must be done to keep success once it has been won—a quite separate problem, and not at all an easy one.

Science News Letter, July 23, 1932

Genetics

GENETIC PRINCIPLES IN MEDICINE AND SOCIAL SCIENCE—Lancelot Hogben—*Knopf,* 230 p., $3.75. A presentation of the known facts of the subject which will repay the careful, thoughtful reading required by this book. The author has no patience with the over-enthusiastic who claim more than the facts allow in the application of genetics to medicine and sociology, and treats them with delightful sarcasm. Here is a typical statement: "If social biology ever becomes an exact science, the dreary history of the Jukes will be regarded as we now regard alchemy."

Science News Letter, July 23, 1932

Mechanics

WHAT EVERY WOMAN SHOULD KNOW ABOUT AN AUTOMOBILE—Hunter Eaton—*Simon & Schuster,* 153 p., $1.50. Husbands will be sneaking this book off their wives' dressing-tables—for it clears up a lot of the finer points that are so hard to explain. Moreover, it tells you what a clutch is, and how to back into a parking-place painlessly. The illustrations and breezy style are delightful.

Science News Letter, July 23, 1932

History of Science

A HISTORY OF SCIENCE AND ITS RELATIONS WITH PHILOSOPHY AND RELIGION—Sir William Dampier—*Macmillan,* 514 p., $4. A new printing, in convenient one-volume form, of one of the most successful of recent works on the history of science; especially well adapted for college use.

Science News Letter, July 23, 1932

Physiology

WILL IT BE A BOY? SEX DETERMINATION ACCORDING TO SUPERSTITION AND TO SCIENCE—Fridtjof Okland—*Century,* 116 p., $1.50. The author shows up many of the old superstitions and presents the known facts clearly and simply. He is hopeful that science, which has already accomplished many marvelous feats, will some day be able to accomplish the feat of sex determination, but he recognizes that that day has not yet come.

Science News Letter, July 23, 1932

Hygiene

HEAT AND HEALTH—*Frank Reh—American Book Company,* 192 p. 60c. Book II of the Science Related to Life Series. Heat in the stars, in heating homes, in cooking and other domestic activities, in industrial processes and in medicine and health are some of the many aspects of the subject taken up in this elementary science text. It is interestingly written and should prove stimulating to the pupil.

Science News Letter, July 23, 1932

Medicine

EPIDEMIC ENCEPHALITIS: ETIOLOGY, EPIDEMIOLOGY, TREATMENT — Second Report by the Matheson Commission—*Columbia University Press,* 155 p., $1.50. This report is largely a summary of the literature on the subject up to 1929, with some of the Commission's conclusions. There is a lengthy bibliography. The Commission, of which William Darrach is chairman, hopes to publish a detailed report of its clinical and laboratory investigations later.

Science News Letter, July 23, 1932

Education

EDUCATION, CRIME, AND SOCIAL PROGRESS—William C. Bagley—*Macmillan,* 150 p., $1.20. The author considers the lack of mental discipline, the child-centered school, and other "weaknesses" of the American educational system related to increase of crime in this country.

Science News Letter, July 23, 1932

Education

YEARS OF BUILDING—Caroline A. Yale—*Dial Press,* 311 p., $3.50. The memoirs of a woman whose life has been devoted to the education of the deaf.

Science News Letter, July 23, 1932

First Glances at New Books

Continued from page 59

Dendrology

THE TREES OF YOSEMITE—Mary Curry Tresidder—*Stanford Univ. Press,* 133 p., $2. A most worthy addition to the excellent series of popular books on the National Parks being issued by the Stanford University Press; artistically and typographically the best that has so far appeared. The text is botanically accurate, instructive without being didactic, skilfully adjusted to the intended audience. The 34 linoleum-block illustrations by Della Taylor Hoss are surprisingly correct from the scientific viewpoint when one considers the inherent limitations of the medium.

Science News Letter, July 23, 1932

Hygiene

HEALTH FOR TRAVELERS: HYGIENE AND HEALTH PRESERVATION IN THE TROPICS, ORIENT AND ABROAD—Edited by Alfred C. Reed—*J. W. Stacey,* 116 p., $3. The staff of the Pacific Institute of Tropical Medicine of the University of California has prepared a practical handbook which travelers will find very useful.

Science News Letter, July 23, 1932

Ecology

ANIMAL LIFE AND SOCIAL GROWTH—Warder Clyde Allee—*Williams & Wilkins,* 159 p., $1. The volume of the Century of Progress series by the professor of zoology at the University of Chicago gives a view of the home and community life of the animals about us. Dr. Allee argues that the student of human society can learn from the wild animals and the insects.

Science News Letter, July 23, 1932

Evolution

PURPOSE IN EVOLUTION—Sir J. Arthur Thomson—*Oxford Univ. Press,* 59 p., 75c. One of the foremost of English-speaking biologists attacks the ancient, still vexed problem of design. What he has to say on this subject is worth the careful attention of every thoughtful reader.

Science News Letter, July 23, 1932

Hygiene

HYGIENE—Florence L. Meredith—*Blakiston's,* 802 p., $3.50. Second edition of a textbook for college students. The subject is thoroughly covered, the book including sections on anatomy, physiology, mental hygiene and pathology. Not only college students but other intelligent adults desiring to know the facts about the human body in health and disease and how to maintain health will be delighted with this book. It does not presuppose any knowledge of the subjects treated, but it is simple and clear without descending to the juvenile level.

Science News Letter, July 23, 1932

Ethnology

SETH EASTMAN: THE MASTER PAINTER OF THE NORTH AMERICAN INDIAN—David I. Bushnell, Jr.—*Smithsonian Inst.,* 18 p., 15 pl. As an army officer of the nineteenth century detailed to duty at various posts in the United States, Seth Eastman had many opportunities to observe and paint Indians. This appreciative account of Eastman's life and art is illustrated with a number of his fine paintings.

Science News Letter, July 23, 1932

Physiology

HUMORAL AGENTS IN NERVOUS ACTIVITY—G. H. Parker—*Macmillan,* 79 p., $1.75. A new theory of the relation between nerves and hormones is presented in this slim volume, which has been expanded from a lecture given to the members of the Zoological Laboratory of the University of Cambridge. While it will be of interest to zoologists and physiologists, it is too technical for the average lay reader.

Science News Letter, July 23, 1932

Economics

UNEMPLOYMENT—Aaron Director—*American Library Association,* 54 p., cloth 50c., paper 35c. One of the excellent Reading with a Purpose Series containing a brief discussion of this engrossing problem and advice for further reading on the subject.

Science News Letter, July 23, 1932

Criminology

CRIME, CRIMINALS, AND CRIMINAL JUSTICE—Nathaniel F. Cantor—*Holt,* 470 p., $3.50. A comprehensive work dealing with many sides of this problem. An interesting section of the book contains a complete survey of the penal system of the Soviet Union.

Science News Letter, July 23, 1932

Ethnology

SEMITIC MYTHOLOGY—Stephen Herbert Langdon—*Marshall Jones,* 454 p., $10. This scholarly work on the mythologies and religions of all the Semites of antiquity completes the texts of the series, "Mythologies of All Races." The index, which is the thirteenth volume, will appear shortly. Each volume has its own index, however, and is complete in itself. So much data has come to light regarding the Phoenicians, Hebrews, Babylonians, and other Semitic peoples that Prof. Langdon's book is as new as it is comprehensive. Some of his conclusions are unexpected, as when he theorizes that among the Semites worship of one god preceded worship of many. The series does credit to its sponsor, the Archaeological Institute of America.

Science News Letter, July 23, 1932

Geophysics

TRANSACTIONS OF THE AMERICAN GEOPHYSICAL UNION, THIRTEENTH ANNUAL MEETING, 1932—*National Research Council,* 401 p. A fascinating volume for those who are the least interested in the earth as a physical body. It contains papers discussing the latest developments in meteorology, oceanography, volcanology, terrestrial magnetism and electricity, seismology, geodesy and hydrology presented in Washington, April 28 and 29. Plans for polar year observations are given in several reports.

Science News Letter, July 23, 1932

Physiology

THE PHYSIOLOGY OF LARGE REPTILES—F. G. Benedict—*Carnegie Institution,* 539 p., cloth $5, paper $4. The central point of attack in the investigations outlined in this book has been heat production in snakes, tortoises, lizards and alligators. These cold-blooded creatures, whose whole physiology seems so alien to our own, can yet teach many lessons of great use to the investigators of the bodily processes of warm-blooded creatures.

Science News Letter, July 23, 1932

Psychology

TESTS AND MEASUREMENTS—Irene Palmer—*Barnes,* 143 p., $2. Some elementary information regarding tests and educational statistics in the form of a text for a one-semester course for teachers of health and physical education.

Science News Letter, July 23, 1932

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